IN THE SPECIFICATION:

Please amend the specification as follows in accordance with 37 C.F.R. § 1.121:

Page 1, on paragraph [0002] that begins with " This application claims..........."

Place it under the title of the invention.

Pages 8 and 9, on paragraph [0037] that begins with "To begin with, FIG. 1 illustrates ...."

To begin with, FIG. 1 illustrates a non-redundant field ground detector implementation of the present invention, referenced generally at 100. A low frequency square wave oscillator 104 is applied to the field leads 116 of the generator through a sense resistor 106 and an attenuator network [108, 110]. The attenuator network 108, 110 connects to both fields resulting in a signal that biases the center of the field plus and minus the oscillator voltage with respect to ground. The is, neither field lead is individually biased with respect to ground, eliminating one of the shortcomings of earlier implementations (e.g., the problem caused by the elevation of one lead to bias voltage plus field voltage above ground). <u>When a ground fault occurs, current through the sense resistor 106 produces a voltage across it, that is fed into a voltage-controlled oscillator (VCO) 102, and the output of the VCO 102 is transmitted as a frequency back to a exciter control 114 through a fiber optic network 112.</u>

Page 9, on paragraph [0038] that begins with "The exciter control ...."

The exciter control (generally represented by interface 114) interfaces to the ground detector by sending an oscillator voltage command through a fiber optic cable

118 via a fiber optic network 112, and reading the sense voltage through a second fiber optic cable 120. Power from the exciter control is used to power an isolated power supply (not shown) in the field ground detector so that the field ground detector remains completely isolated from the exciter control circuit.

Pages 9 and, on paragraph [0040] that begins with " The functionality estimates..........."

The functionality estimates the ground fault resistance by performing measurements on two consecutive half cycles of the low frequency oscillator voltages. FIG. 2 illustrates a circuit diagram for steady state DC signals including bleeder resistors (Rb) (206, 208) across the shaft voltage suppressor capacitors (202, 204), and attenuator resistors (R)(210, 212). On the positive half cycle of oscillator voltage, the voltage across the sense resistor (Rs) 214 is given by the following Equation 1.0:

Vs1 = (Rd*Voscp +ReVfgp+Rf*~~xVfgp~~ x*Vfgp)/

(R^2Rb^2+2R^2RbRx+2RRb^2Rx+2RRb^2Rs+4RRbRsRx).

Page 13, on paragraph [0055] that begins with " FIG. 3 illustrates..........."

FIG. 3 illustrates the attenuator module used for exciter input transformer voltages between 750 Vrms and 1125 Vrms. The attenuator resistors of 16.2 kohms and 2 kohms are used to limit the flow of current through the sense resistors formed by the 2 kohm resistor in parallel with two 900 ohm resistors in series with the 200 ohm resistor. ~~The 2, 1 microfarad capacitors~~ The two capacitors with a value of one microfarad each, that are in parallel from the attenuator string to ground limit the fundamental frequency component of voltage applied to the sense resistor. The MOVs from the attenuator string

to ground limit the maximum voltage to ground applied to the sense resistor. The relay shown is controlled by controller C and determines which oscillator (M1 or M2) is applied to the sense resistor and attenuator string.

Pages 15 and 16, on paragraph [0061] that begins with "FIG. 10 illustrates a functional ...."

FIG. 10 illustrates a functional block diagram of an implementation which makes use of redundant techniques to enhance the reliability of the implementation when redundant controllers are used. The field ground detector module 1002 is connected to an attenuator module 1004, that forms an interface between the field ground detector 1002, that is a low-voltage module and the high-voltage sections composed of a field winding section 1006, that is the field generator that produces the main flux in the generator, a shaft voltage suppressor 1008, that is used to protect the field generator from commutation spikes, and a bridge 1010 which is a power electronics section that contains thyrsitors that convert AC input into DC. The field ground detector 1002 contains redundant oscillators that are controlled by Master 1 and Master 2, respectively. Isolated power supplies that receive their power from Master 1 and Master 2 power these oscillators. Master 1 and Master 2 command these oscillators to go to either the positive or negative state. The protection controller makes the decision which master will be in control and selects the appropriate oscillator through a relay contact. All three controllers measure the oscillator voltage during the first 200 msec after a transition, and then measure the voltage across the sense resistor for the remainder of the half cycle. This

permits voting of measured signals so that single point failures will be detected and eliminated from the output.

Page 22, on paragraph [0079] that begins with " In one configuration,..........."

In one configuration, <u>and in reference to Figure 13,</u> ~~the~~ <u>each</u> controller module assembly contains up to six boards: the main processor board - Application Control Layer Card (ACLA) <u>1305</u>, the digital signal processor board (DSPX) <u>1310</u>, ISBus communication board (EISB) <u>1315</u>, and three ~~1/O~~ <u>I/O</u> boards (EEIO <u>1320</u>, EMIO <u>1325</u>, and ESEL <u>1330</u>). These boards are interconnected through ~~the~~ <u>aVersa Module Eurocard</u> ~~VME~~ <u>(VME)</u> style backplane and are cabled together to their associated ~~1/O~~ <u>I/O</u> termination boards.

Page 23, on paragraph [0085] that begins with " The EMIO Master ...."

The EMIO Master I/O board handles the ~~1/O~~ <u>I/O</u> from the EPCT, ECTB, and EXTB termination boards. This I/O include PT and CT signals, contact inputs, output relay drivers, and pilot trip relay drivers for flashing, ~~41~~ <u>DC breaker contactor</u> close function, and de-excitation. It also sends logic level gate pulse signals via the backplane to the ESEL board.

Page 24, on paragraph [0086] that begins with " In one configuration ...."

In one configuration, the Exciter Selector board (ESEL) <u>1330</u> is controlled by six logic level gate pulse signals from the EMIO, one for each bridge SCR. ESEL generates six gate pulse signals that are cabled to the EGPA board <u>1350</u> which directly control the six SCRs on that bridge. ESEL is capable of controlling up to six bridges in a multi-bridge exciter. If there are redundant controls, two ESEL are used, one driven by M1

1335 and the other by M2 1340. The active ESEL is selected by module C 1345, and sends the selected control signals to the EGPA board.

Pages 24, on paragraph [0087] that begins with " The exciter PT ...."

The exciter PT (Potential Transformer)/CT (Current Transformer) termination board (EPCT) 1355 contains transformers for critical generator voltage and current measurements. Three-phase generator voltage inputs support two channels of generator voltage feedback data from the generator or one from the generator and one from the line side of the sync breaker. Two generator current inputs, with current levels of 1 A or 5 A, are brought into two current transformers to support one channel of generator current feedback data. All the transformer output signals are cabled to the EMIO board in the control rack. In addition, one analog input, which can be either ± 10 volt dc or 4-20ma current, is brought into EPCT. The EMIO board performs an analog to digital conversion on all PT, CT, and analog input signals at 2000 samples per second. The resulting generator current and voltage measurements are within 0.25% of actual reading. High frequency noise suppression near the point of signal entry is provided on all input signals to EPCT.

Pages 25, on paragraph [0090] that begins with " The Exciter Contact Terminal Board ...."

The Exciter Contact Terminal Board (ECTB) 1360 supports relay outputs and contact inputs. There are two versions; a redundant mode version and a Simplex mode

version. Each board contains, for example, two trip rated relay outputs that can operate a customer lockout relay, controlled by the EMIO board. There are also four general purpose Form-C relay outputs available, also controlled by the EMIO board. The four general purpose relay dry contacts are, for example, rated 125 Vdc nominal (250 Vdc max, 24 Vdc min) for resistive load of 2 A at 28 Vdc or 0.5A at 120 Vdc or for an inductive load of l A at 28 Vdc or 0.1 A at 120 Vdc for a load with a 0.007 s (L/R) time constant.

Pages 25, on paragraph [0092] that begins with " The Exciter Terminal Board ...."

The Exciter Terminal Board (EXTB) 1365 supports pilot relay outputs, contact inputs, and signal conditioning circuits used internally by the excitation system. There are two versions of this board, one to support redundant systems and one to support simplex systems. Both versions cable to the EMIO boards where the relay drivers are located.

Pages 25 and 26, on paragraph [0093] that begins with " Pilot relays used ...."

Pilot relays used to support the dc output and field flashing contactors are located on the board, plus trip relays for external field breaker applications and the de-excitation pilot relay. Crowbar status signals and de-excitation status signals from the ~~EXDE~~ EDEX board are conditioned on EXTB and sent to EMIO. Three status contact inputs, for the field contactor/breaker, and field flashing monitoring, are powered by 70 Vdc on EXTB. Optocoupler circuits monitor these contacts. On redundant system, the 70 Vdc power for the contacts is provided by the M1 and M2 power supplies. The resulting signals are sent to the EMIO.

Page 26, on paragraph [0094] that begins with " The Exciter Power Supply Module ...."

The Exciter Power Supply Module (EPSM) 1375 converts 125 Vdc from the Power Distribution Module (EPDM) 1385 into the voltages required for the Exciter Control System' s card rack. The EPSM module has, for example, two main sections: a buck regulator that takes the 125 Vdc input and supplies the input side of a multi-tapped switching isolation transformer; and a converter section that generates the +5, +15, -15, 24, and 70 Vdc power outputs. The Exciter Power Supply Backplane (EPBP) (not shown) power supply backplane board is used to mount and distribute the inputs and outputs to the EPSM board as well as house the field ground detector modules.

Page 26, on paragraph [0095] that begins with " Each of the control ...."

Each of the control sections M1, M2, and C may be provided with an independent power supply module. In one configuration, the control backplane (EBKP) rack (not shown) holds the control boards and is supplied with +5 Vdc, ±15 Vdc, and +24 Vdc by the EPSM. Power may be supplied to modules external to the EBKP as follows: ±24 Vdc to power the De-Excitation module, Crowbar module, Ground Detector, and the Field Voltage/Current module (EDCF); and Isolated +70 Vdc for "contact wetting" to the EXTB and ECTB boards.

Pages 26 and 27, on paragraph [0097] that begins with " Referring now to ...."

Referring now to the Exciter Power Distribution Module (EPDM) 1385 , control power can be acquired from a 125 Vdc source and one or two 115 Vac sources. The ac

source is passed through an external ac/dc converter module. The resulting 125 Vdc is diode coupled with the other dc sources onto a dc bus on the EPDM board. The EPDM feeds the control modules and gate pulse amplifier boards. Outputs from the EPDM are fused, pass through switches, and have LED status indicators. AC power for the bridge cooling system comes from breakers included in the exciter.

Page 27, on paragraph [0098] that begins with " The Gate Pulse Amplifier ...."

The Gate Pulse Amplifier Board (EGPA) <u>1350</u> interfaces the control to the Power Bridge. The EGPA takes the gate commands from the ESEL and controls the gate firing of up to six SCRs (Silicon Controlled Rectifiers) in the Power Bridge. It also is the interface for current conduction feedback, and the bridge airflow and temperature monitoring. A nominal 130 Vdc power source supplies an on-board DC/DC converter, which provides the isolated power for SCR gating over the full range of input supply voltage. LEDs provide visual indication of the status of the output firing, currents into the bridge, power supply, line filter, cooling fan rotation, bridge temperature, and alarm or fault conditions.

Page 27, on paragraph [0099] that begins with " The Exciter DC Feedback ...."

The Exciter DC Feedback Board (EDCF) <u>1380</u> measures field current and field voltage at the SCR bridge, and interfaces to the EISB board in the control panel over a high-speed fiber optic link. The EDCF converts the field current and voltage into two frequencies that are sent over the fiber optic link at 10MBd. The fiber optics provides

voltage isolation between the two boards, as well as high noise immunity. Transformer coupling provides power supply up to 1500 V rms isolation on the 24 Vdc supply for this board. The field voltage feedback circuit provides seven selector settings to scale down the bridge voltage, depending on the bridge operating voltage.

Pages 27 and 28, on paragraph [0100] that begins with " The Exciter AC Feedback ...."

The Exciter AC Feedback termination Board (EACF) 1390 contains, for example, transformers for a single three-phase voltage measurement, and terminals for two Flux/Air core coils. The outputs of the voltage and current circuits are fanned out to three connectors for cables to modules M1, M2, and C. High frequency noise suppression near the point of signal entry is provided for the flux/air core input signals. Cable shield termination screws attached to chassis ground are located within three inches of each set of input screws where applicable.

Page 28, on paragraph [0101] that begins with " In one configuration ...."

In one configuration, the Exciter De-Excitation Module (EDEX) 1370 is based on a free-wheeling diode and supports a non-inverting system. In another configuration, the EDEX is of a higher performance type based on a SCR and supports an inverting system. The EDEX used on high performance excitation systems typically includes the following features and capabilities. During shutdown of the generator, the energy of the generator field is dissipated. In the control system 1200 exciter, this is the function of the de-excitation module and field discharge resistor or inductor (when supplied). The de-excitation module consists of a thyristor (53 mm or 77 mm cell size) mounted in a large

heatsink assembly with attached snubber network. The board includes conduction sensor functions and firing control functions and is mounted on the heatsink. The Conduction Sensor Function contains Hall effect sensors. The sensors are mounted in the air gap of a circular steel core attached to the board. They sense the magnetic field produced by the field discharge current flowing through the thyristor. Two independent sensor circuits are used.

Page 32, on paragraph [0113] that begins with " The Field Ground ...."

The Field Ground Detector (EGDM) 1390 is described in more detail hereinabove. In the exemplary embodiment of Fig. ~~12~~ 13, the EGDM is provided in an exciter system and detects field leakage resistance from any point in the field circuit, starting at the ac secondary windings of the input transformêr through the excitation system and ending at the dc generator field. The active detection system applies a low voltage with respect to ground and monitors current flow through a high impedance ground resistor. When ~~PRV~~ peak reverse voltage (PRV) resistors are present, grounds anywhere in the system can be detected even while the exciter is not running (gating SCRs). Without PRV resistors, any ground on the ac side of the power bridges can only be found when the system is running.

Pages 34 and 35, on paragraph [0122] that begins with " One important function ...."

In reference to Figure 14, ~~One~~ one important function of the excitation system is the transducering system, often primarily software implemented. The generator PTs and CTs are the source of the control signals needed by the automatic (generator terminal

voltage) regulator, most limiters, and protection functions. In one manner, a transducer may be provided that, unlike more traditional generator transducers, simultaneously samples the ac waveform at high speed and in software uses mathematical algorithms to digitally generate the variables needed. For instance, the output of the software transducer system could include the following: Generator Voltage -the average generator output voltage; Generator Active Current -the average generator output current that is in phase with watts; Generator Reactive Current - the average generator output current that is in phase with reactive (imaginary) power (VARs); Generator Frequency - the current operating frequency of the generator; Slip - a signal representing the change in the rotor speed . The software base transducer system may use the above to calculate the following: Generator Power and VARs; Magnitude of generator flux (V /Hz); and Phase Angle and Power Factor.

Page 35, on paragraph [0123] that begins with " The Auto Regulator ...."

~~The~~ An Auto Regulator Reference (AUTO REF) block 1405 generates the auto control (AC) setpoint variable for the Automatic Voltage Regulator (AVR). Operator commands, (raise and lower inputs) come in from direct ~~nputs~~ inputs or over a data link from an ~~HMI~~ human-machine interface (HMI) operator station or from a plant DCS or remote dispatch system. This block can be configured with upper and lower limits, presets, and up/down ramp times.

Page 35, on paragraph [0124] that begins with " The Manuel Regulator ...."

~~The~~ An Manual Regulator Reference (MANUAL REF) block 1425 generates the manual setpoint variable for the Manual Voltage Regulator (MVR). Operator commands,

(raise and lower inputs) come in from direct inputs or over a data link from an ~~HM1~~ human-machine interface (HMI) operator station or from a plant DCS or remote dispatch system. This block can be configured with upper and lower limits, presets, and up/down ramp times.

Page 35, on paragraph [0126] that begins with " The Exciter AVR ...."

The Exciter AVR Setpoint (EXASP) block 1435 combines a number of functions to produce the reference input to the Automatic Voltage Regulator 1445 and the variable to support regulator tracking. The reference output from this block is, for example, a summation of the following: the stabilizing signal from the PSS Block 1410; the output of the AVR REF block 1405; the limiter signal from the UEL block 1415; the output from the RCC/ARCC block 1430; the combination of Frequency and Generator voltage to generate the V /Hz limiter signal 1420; an external test signal 1440 to support injection of white noise and step test signals.

Page 36, on paragraph [0127] that begins with " The Under Excitation..........."

The Under Excitation Limiter (UEL) 1415 is an auxiliary control to limit the automatic voltage regulator demand for underexcited reactive current or power. The UEL prevents reductions of the generator field excitation to a level where the small-signal (steady state) stability limit, or the stator core end-region heating limit is exceeded. Performance is specified by identifying the region of the limiter action on the generator capability curve.

Page 36, on paragraph [0128] that begins with " The Reactive current..........."

The Reactive Current Compensation (RCC/ARCC) function 1430, when in the Reactive Current Compensation (RCC - droop) mode permits sharing reactive current between paralleled machines. When in the Active Reactive Current Compensation (ARCC - line drop) mode, it enables "line drop" for regulating at some point remote from the generator terminals.

Page 36, on paragraph [0129] that begins with "The Volts per Hertz ...."

The Volts per Hertz Limiter (V/Hz Lim) 1420 function acts to reduce an unacceptable volts per hertz ratio to the maximum continuous rating of the generator. This functions uses two inputs from the software transducer, average generator voltage and generator frequency, and its V /Hz ratio is configurable. The generator is considered to be operating acceptably within ~~±5%~~ ±5% of rated terminal voltage at rated frequency.

Page 36, on paragraph [0130] that begins with "The Automatic Voltage ...."

The Automatic Voltage Regulator (AVR) function 1445 of the AVR is to maintain the generator terminal voltage constant over changes in load and operating conditions. The error value (average generator voltage minus the composite reference output from the EXASP block) is the input to a proportional plus integral (PI) regulator with integrator windup protection. In most applications, AVR control output directly controls the firing command generator which control the gating of the power bridge SCRs when the AVR is enabled. On some applications that require an inner loop regulator, such as compound (voltage and current sourced) exciters and some high ceiling exciters, the Manual Regulator will use the control output from the AVR as a setpoint input.

Pages 36 and 37, on paragraph [0131] that begins with " The Power System ...."

The Power System Stabilizer (PSS) 1410 provides an additional input to the automatic regulator to improve power system dynamic performance. Many different quantities may be used by a PSS, such as shaft speed, frequency, synchronous machine electrical power, accelerating power, or some combination of these signals. The PSS offered in the control system 1200 is a multi-input system using a combination of synchronous machine electrical power and internal frequency (which approximates rotor) to arrive at a signal proportional to rotor speed. This comes from the integral of accelerating power, but with shaft torsional signals greatly attenuated.

Page 37, on paragraph [0132] that begins with " The Stator current ...."

~~The~~ A Stator Current Limit (SCL) function is used when the generator stator current exceeds the rate value. Upon the occurrence of this condition, the exciter will change from AVR control to a VAR control that is preset to a minimal stator current value. Once the stator current is less then the rated value, the exciter will return to AVR control.

Page 37, on paragraph [0133] that begins with " The Manual Regulator ...."

The Manual Regulator (FVR 1450 or FCR 1460) function of the manual regulator is to control the generator field voltage or current thus letting the generator output voltage vary as a function of the flux level in the field, speed of and load on the generator. The manual regulator, like the AVR, use a proportional plus integral (PI) regulator with integrator windup protection and its control output directly controls the ~~flring~~ firing command generator that control's the gating of the power bridge SCRs when enabled.

There are two inputs, the setpoint or reference input to the manual regulator and the generator field feedback.

Page 38, on paragraph [0136] that begins with " The over-excitation limiter ...."

~~The~~ An over-excitation limiter (OEL) function is to protect the generator field from damage by events that would require abnormally high field currents. These high currents, over an extended time, can overheat the field thereby causing damage. Generator fields may be designed to ANSI Standard C50.13, which specifies the over voltage as a function of time that the field is designed to follow. This standard uses curves to describe the field overheating as a function of time and current. The OEL may be designed to approximate the curve of field voltage versus time.

Pages 38 and 39, on paragraph [0139] that begins with " The Hydrogen Pressure ...."

~~The~~ A Hydrogen Pressure /Temperature Limiter Compensation feature compensates the configuration parameters of key generator limiters and protection functions based on generator cooling. The intent of this function is to correlate limiter action to the valid generator capability curves. For hydrogen cooled generators the correct parameter is the internal hydrogen pressure and for air cooled generators it is air temperature. In ether case, the exciter uses a 4-20 ma input to capture the parameter. Three limiters affected by pressure/temperature compensation are: Under Excitation Limiter (UEL); Over Excitation Limiter (OEL); and Stator Current Limiter.

Page 39, on paragraph [0141] that begins with " The Manual Restrictive ...."

~~The~~ A Manual Restrictive Limiter feature limits the under-excited operation of the exciter while the Manual Regulator is selected (FVR or FCR). It also does not allow the Manual regulator to track the Automatic regulator when the unit is operating below

the field voltage called for by the Manual Restrictive Limiter but still operating in the AVR mode.

Page 39, on paragraph [0142] that begins with " The VAR/PF ...."

~~The~~ A VAR/PF Control function is accomplished by slow ramping of the AVR reference setpoint. The VAR/PF is selected by operator command and the var/pf value is controlled using, for example, raise/lower push buttons.

Page 39, on paragraph [0144] that begins with " The Unit Data..........."

~~The~~ A Unit Data Highway Interface (UDH) connects the exciter with a generator control system, such as a turbine control system, e.g., GE's Speedtronic™, Human Machine Interface (HMI) or ~~HM1 Viewer!Data~~ HMI ViewerData Server, and GE Fanuc PLC controls. The UDH is based on Ethernet Global Data (EGD) protocol. The UDH provides a digital window into the exciter through which all pertinent variables can be monitored and controlled. Also support on this link is the interface to GE's Control System ToolBox configuration and maintenance tool for the exciter.

Page 40, on paragraph [0146] that begins with " The Volts per..........."

~~The~~ A The Volts per Hertz Protection ~~(24G)~~ function serves as a backup to the Volts/Hertz limiter and can be supported with or without the C (protection) controller. The protection scheme consists of two levels of volts per hertz protection -one level is set at 1.10 per unit over volts per hertz with an inverse time period and the other level is set at 1.18 per unit with a 2 second time period. Both trip and time setpoints can be adjustable.

Page 40, on paragraph [0147] that begins with " The Over Excitation..........."

~~The~~ A Over Excitation Protection (OET) function serves as backup to the Over Excitation Limiter and can be purchased separately from the protection module. If an

over-excitation condition should occur which the limiter can not correct, then a trip signal is produced. This function approximates the curve of field voltage versus time defined in ANSI Std. C50.13.

Page 40, on paragraph [0148] that begins with " The Generator Overvoltage ...."

~~The~~ A Generator Overvoltage Trip ~~(59G)~~ function monitors the generator armature voltage and will initiate a trip signal upon detecting an unacceptably high voltage.

Page 40, on paragraph [0149] that begins with " The Potential Transformer ...."

~~The~~ A Potential Transformer Fuse Failure Detection (PTFD) function detects loss of PT feedback voltage to the voltage regulator. If the sensing voltage is lost or if it is single-phased, there is a transfer to the Manual regulator and an alarm output is provided. If the Power Potential Transformer (PPT) is fed from an auxiliary bus instead of the generator ~~tenninals~~ terminals, then a second set of PT signals must be supplied to independently monitor the generator terminal voltage.

Page 40, on paragraph [0150] that begins with " The Transfer to Manual ...."

~~The~~ A Transfer to Manual Regulator upon Loss of PT function detects loss of PT feedback voltage to the AC voltage regulator. If the sensing voltage is lost the regulator will force its output to ceiling for 0.5 seconds and then transfer to Manual. This is distinctly different from the PTFD function which does not force the regulator to ceiling before transferring.

Page 41, on paragraph [0151] that begins with " The Loss of..........."

~~The~~ A Loss of Excitation Protection ~~(40)~~ function detects a loss of excitation on Synchronous Machines. This is an impedance relay function that is implemented in software. This function can be used to satisfy recommended settings and can accommodate separate relay characteristics. The function is performed within software code and can accommodate offset settings and two diameter settings. The offset settings, for instance, may be equal to one-half the machine transient reactance (X'd/2); the small diameter setting is equal to 1.0 per unit on the machine base, and the large diameter setting is equal to the machine synchronous reactance (Xd). The small diameter setting has no time delay and the large diameter setting has an adjustable time delay.

Page 41, on paragraph [0153] that begins with " The Exciter Phase..........."

~~The~~ A Exciter Phase Unbalance (EUT) function monitors the secondary voltage from the three phase input power potential transformer. If a voltage phase unbalance condition exists, an alarm is generated, and a trip signal is initiated after a time delay.

Page 41, on paragraph [0154] that begins with " The Off-Line..........."

~~The~~ An Off-Line Over Excitation Protection (OLOT) function serves as backup to the Over Excitation Limiter when the generator is off-line. If the generator field current exceeds 120% of no-load field current while operating off-line, in either the automatic regulator or manual regulator mode, and the limiter can not correct an over-excitation condition, this function will initiate a trip signal after a time delay.

Page 42, on paragraph [0155] that begins with " The Generator Field..........."

~~The~~ A Generator Field Temperature Calculation feature measures the resistance by dividing the field voltage by the field current. From the known field resistance at 25°C and the linear resistance temperature change in copper, the algorithm calculates operating temperature. An adjustable high temperature alarm output contact is also included.

Page 42, on paragraph [0156] that begins with " Although the embodiment..........."

Although the embodiment of Fig. 12 focused on the application of the field ground detector with static exciters, this inventive concept can be used to detect grounds in any of a number of applications, including on the generator field in regulator applications. For example, a regulator that excites the field of a rotating exciter or the control winding of a saturable transformer furnished as part of a compound static exciter. An important aspect is to provide access to the generator field winding to ensure effective system operation. With a static exciter, an EXAM card is used to interface between the ground detector module and the field winding. An EGDM card is utilized to interface between the exciter cards in the control rack and the EXAM card. In regulator applications, the same EXAM card may be used to interface to the field winding, but an ~~EROC~~ exciter regulator option card (EROC) is used (as opposed to an EGDM card in the ground detector module) to perform most of the ground detector functionality. When a regulator is used, redundant ground detectors will generally not be used.

In the specification, please delete the "APPENDIX: Software", page 43 to page 61, and replace with the following:

-- This application is provided along with one (1) compact disc of a computer program listing that is provided as an Appendix, the contents of which are incorporated herein by reference in their entirety. --

Page 7, following paragraph [0031] that begins with " Fig. 12 is a schematic...........", please insert the following:

-- Fig. 13 is a schematic diagram illustrating the interconnection between a controller module with other input/output modules of the present invention.

Fig. 14 is a software-based transducer system flow implementation according to an embodiment of the present invention. --

IN THE DRAWINGS:

The attached sheets of drawings includes changes to Figures 2 and 5 as well as the addition of Figures 13 and 14. The replacement sheet, which includes FIGS. 2 and 5, replaces the drawing sheet including FIGS. 2 and 5, which was submitted with the filing of the application on November 08, 2001.